

FILE

Amendment to the
Test Plan
for
Limited Small-Scale Field Study
(Ultraviolet/Ozone Process)

Rocky Mountain Arsenal
Director

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by

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INTRODUCTION

1. From 6 Jun 77 through 1 Sep 77, a limited small-scale field study was conducted at Rocky Mountain Arsenal (RMA) aimed at assessing the potential of the UV/ozone process in removing organic contaminants from RMA groundwater. This program was conducted using an ULTROX* unit to treat groundwater from Well 3. The test program included a series of test runs made using various operational parameter settings. The data obtained was analyzed using a computer assisted analysis program to determine optimum operational parameters along with cost data. The test program discussion and results are included in a draft interim report.**

2. Information obtained as a result of the summer program must be verified. There is also a need to conduct an intensive characterization program on both the exhaust gas and the effluent from the ULTROX unit. The potential of the UV/ozone process on more concentrated waste streams and in combination with activated carbon must be assessed. For these reasons, the ULTROX testing program is being continued through 15 Nov 77 at RMA.

OBJECTIVES

3. The additional objectives of this extended test program include:
- Verification of the optimum operational parameters as predicted by the computer assisted analysis program.

* ULTROX is a trade name for a unit manufactured by WESTGATE RESEARCH CORPORATION, Los Angeles, California.

** Thompson, D. W., Khan, A. A., Puett, D. R., and Francingues, N. R., "Limited Small-Scale Field Study for Destruction of Organic Contaminants by Ultraviolet/Ozone Oxidation - Interim Report," U. S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

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b. Chemical characterization of both exhaust gas and effluent from the ULTROX unit.

c. Assess the potential of the UV/ozone process in removing organic contaminants from more concentrated waste streams.

*was
Not
achieved* } d. Assess the effect of the use of activated carbon in combination with the UV/ozone process.

APPROACH

4. The operation of the ULTROX unit in the extended test program will be similar to that in the summer program. Sample collection and analysis will be conducted as in the earlier program.

5. The verification work will be conducted first. A series of five test runs will be made using operational parameter settings indicated by the analysis program to be optimal. Additional runs will be conducted as required. The exhaust gas and effluent analysis program will be conducted at the same time. Exhaust gas and effluent samples will be collected during the verification runs for use in the characterization program.

6. All additional time until 15 Nov 77 will be used to conduct UV/ozone treatability tests with the ULTROX unit on other source water. This water will include Well 118 (near Basin F) and other groundwater in the vicinity of suspected contaminant sources. This part of the program will be conducted using as a starting point, operational parameter settings extrapolated from work conducted on Well 3. Parameter settings will be varied as indicated by the effluent contaminant concentrations in order to determine optimum operational parameter settings. From this information, capital and operational costs can be estimated.

7. Additional work during the remaining time will include combination studies using activated carbon in combination with the ULTROX unit. Carbon columns available at RMA will be used to treat effluent from the ULTROX unit to assess the cost effectiveness of a combination process. Assistance for this work will be provided by the Process Development and Evaluation Division at RMA.

SCHEDULING

8. Work on the extended test ⁷⁶program will begin 1 October 1977 and continue through 15 Nov 77. The verification and characterization work will be completed first. The remaining time will be spent on UV/ozone treatability work on other groundwater sources at RMA and on combination studies. The information gathered in the extended program will be included in the final report on the limited small-scale study using the ULTROX unit at RMA to be presented in draft form on 1 Jan 78.